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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/840,552	04/23/2001	Gebhard Dopfer	GR 98 P 3829 P	4822

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EXAMINER

MARKHAM, WESLEY D

ART UNIT

PAPER NUMBER

1762

DATE MAILED: 05/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 09/840,552	Applicant(s) DOPPER, GEBHARD	
	Examiner Wesley D Markham	Art Unit 1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 7-29 is/are pending in the application.
- 4a) Of the above claim(s) 24-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application (i.e., as paper #14 on 3/5/2003) after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office Action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/5/2003 has been entered.

Response to Amendment

2. Acknowledgement is made of applicant's amendment D, filed as paper #15 on 3/5/2003, in which Claim 6 was canceled, and Claims 1, 2, 4, 5, and 14 were amended. Claims 1 – 5 and 7 – 29 are currently pending in U.S. Application Serial No. 09/840,552, with Claims 24 – 29 being withdrawn from further consideration pursuant to applicant's election of Group I, Claims 1 – 23, in paper #12. An Office Action on the merits follows.

Drawings

3. The formal drawings (3 sheets, 4 figures) filed by the applicant on 4/23/2001 are accepted by the examiner.

Claim Objections

4. Claim 4 is objected to because of the following informalities: The phrase, "directing an electron beam onto the base body;" on line 7 of Claim 4 appears to contain a typographical error. The applicant is suggested to amend the phrase to read, "directing an electron beam onto the base body; and". Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. The rejection of Claims 4 and 5 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention, set forth in paragraphs 6 – 8 of the previous Office Action (i.e., the final Office Action, paper #13, mailed on 12/19/2002), is withdrawn in light of applicant's amendment D in which the term "few" was removed from Claim 4 and the antecedent basis issue in Claim 5 was clarified.
7. Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. Specifically, the limitation, "controlling an outgoing flow of electrons coming into contact with the base body by connecting the base body to a reference potential via a switch at a given frequency" in Claim 2 renders the claim vague and indefinite. It is unclear from this limitation whether (1) the electrons are "controlled" at a given frequency, or (2) the switch switches at a given frequency. This distinction materially affects the scope of the claim, and therefore the scope of Claim 2 is unclear. For the purposes of examination only, the examiner has reasonably interpreted the aforementioned limitation to be equivalent to "controlling an outgoing flow of electrons coming into contact with the base body by connecting the base body to a reference potential via a switch at a given switching frequency".

9. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

10. Claim 4 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Specifically, amended Claim 4 requires a switching frequency in a range from 3 Hz to 27 MHz. For support, the applicant points to page 7, line 19, through page 8, line 2, of the specification. After reviewing

the cited portion of the specification as well as the specification as a whole, the examiner notes that the lower limit of 3 Hz as a switching frequency is not described in the specification as filed. While the applicant does disclose "a few" Hz as a switching frequency (page 7, line 20, of the specification), this is not sufficient to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention (i.e., a switching frequency of 3 Hz as a lower limit). In other words, "a few" does not necessarily equate to "3".

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1, 3 – 5, 7 – 12, 16, and 18 – 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harvey et al. (GB 1 447 754 A) in view of Matthews (GB 2 323 855 A), in further view of Welch (USPN 4,209,552), and in further view of Goedicke et al. (WO 97/22988 A1). Please note that, since the Goedicke et al. document published in German, USPN 6,083,356 (which is the equivalent U.S. National Stage Application (i.e., the "371" application)) is being used as an effective English language translation.

13. The combination of Harvey et al., Matthews, and Welch teaches all the limitations of Claims 1, 3 – 5, 7 – 12, 16, and 18 – 22 as set forth in paragraphs 12 – 14 of the non-final Office Action (i.e., paper #7, mailed on 6/19/2002), except a process wherein (1) the switching frequency is substantially 27 MHz (Claim 1), (2) the switching frequency is in a range from 3 Hz to 27 MHz (Claim 4), and (3) the switching frequency is substantially 50 KHz (Claim 5). Specifically, Harvey et al. teaches a switching frequency of about one or two times per minute (page 2, lines 103 – 104). However, Harvey et al. also teaches that shorter periods can be used (page 2, lines 98 – 105). In other words, Harvey et al. teaches that the switching frequency between electron bombardment heating and ion bombardment / plasma cleaning can vary and be chosen by a purveyor in the art. No upper or lower limits of this frequency appear to be set by Harvey et al. In addition, Goedicke et al. teaches a method of pre-treating substrate surfaces for a subsequent coating step, the pre-treating method comprising alternating the polarity of the substrate in a vacuum chamber in order to alternate / switch between electron bombardment and ion bombardment of the substrate in a glow discharge (i.e., a process analogous to that of the combination of Harvey et al., Matthews, and Welch) (Abstract, Col.2, lines 53 – 67, Col.3, lines 1 – 22, and Col.4, lines 9 – 15). Goedicke et al. teaches that the switching frequency should be set in the range of between 1 Hz to 1000 kHz, preferably between 20 and 50 Hz (Abstract and Col.3, lines 3 – 9). Therefore, it would have been obvious to one of ordinary skill in the art to utilize a switching frequency in the range taught by Goedicke et al. as the switching frequency of the

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combination of Harvey et al., Matthews, and Welch with the reasonable expectation of (1) success, as Goedicke et al. teaches that utilizing such an electron bombardment / ion bombardment switching frequency to pre-treat a substrate can be successfully performed, and (2) obtaining similar results when compared to using the switching frequency taught by Harvey et al. (i.e., similarly cleaning and heating the substrate prior to depositing a coating on the substrate). Please note that the switching frequency values taught by Goedicke et al. overlap the switching frequency values claimed by the applicant in Claims 4 and 5. In the case where the claimed ranges overlap or lie inside ranges disclosed by the prior art, a *prima facie* case of obviousness exists (*In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990)).

Regarding Claim 1, the combination of Harvey et al., Matthews, Welch, and Goedicke et al. does not explicitly teach a switching frequency of substantially 27 MHz. However, the examiner maintains that, in light of (1) Harvey et al.'s teaching that the switching frequency can vary and be chosen by a purveyor in the art, (2) the lack of upper or lower limits set on the switching frequency by Harvey et al., and (3) the broad range of switching frequencies taught by Goedicke et al., it would have been obvious to one of ordinary skill in the art to optimize the switching frequency through routine experimentation in order to achieve the appropriate heating / cleaning effect desired by Harvey et al.

14. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Harvey et al. (GB 1 447 754 A) in view of Matthews (GB 2 323 855 A), and in further view of Welch (USPN 4,209,552).
15. The combination of Harvey et al., Matthews, and Welch teaches all the limitations of Claim 2 as set forth in paragraphs 12 – 14 of the non-final Office Action (i.e., paper #7, mailed on 6/19/2002), including a method wherein the switching frequency is selected from the group consisting of “an adjustable frequency” and “a regulated frequency”. This limitation is met by Harvey et al. Specifically, Harvey et al. teaches that the switching frequency can be about one or two times per minute, although shorter or longer periods can be used (page 2, lines 98 – 105). As such, it is clear that the frequency of Harvey et al. can be adjusted as desired by the purveyor in the art (i.e., it is adjustable). Since the frequency can be adjusted, it could also be “regulated”. Importantly, please note that no actual frequency adjusting or regulating step is claimed by the applicant.
16. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Harvey et al. (GB 1 447 754 A) in view of Matthews (GB 2 323 855 A), in further view of Welch (USPN 4,209,552), in further view of Goedicke et al. (WO 97/22988 A1), and in further view of Rickerby (USPN 5,652,044).
17. The combination of Harvey et al., Matthews, Welch, and Goedicke et al. teaches all the limitations of Claim 13 as set forth above in paragraph 13, except for a method wherein the plasma is formed with the reactive gas hydrogen. However, such a

limitation would have been obvious to one of ordinary skill in the art in light of Rickerby for the reasons set forth in paragraph 16 of the non-final Office Action (i.e., paper #7, mailed on 6/19/2002).

18. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harvey et al. (GB 1 447 754 A) in view of Matthews (GB 2 323 855 A), in further view of Welch (USPN 4,209,552), and in further view Wright et al. (USPN 4,090,941).
19. The combination of Harvey et al., Matthews, and Welch teaches all the limitations of Claim 14 and 15 as set forth in paragraphs 12 – 14 of the non-final Office Action (i.e., paper #7, mailed on 6/19/2002), except for a method comprising initially heating the article without a gas for forming a plasma and then adding the gas for forming the plasma (Claim 14), particularly heating the article by irradiation with electrons (Claim 15). However, Harvey et al. does teach alternately heating and cleaning the article (page 2, lines 98 – 105), which reasonably suggests a cycle of heating – cleaning – heating – cleaning – etc. Wright et al. teaches that, in the art of electron bombardment heating and ion bombardment cleaning of a turbine blade prior to coating (i.e., a process analogous to that of Harvey et al.), it is desirable to first heat the substrate by electron bombardment to a preferred temperature, and then sputter clean the surface through argon ion bombardment (Col.3, lines 61 – 68, and Col.4, lines 1 – 6 and 22 – 37). Additionally, Matthews teaches that such electron bombardment heating can be carried out in an evacuated vacuum chamber

without raising the chamber pressure by admitting argon gas (i.e., the heating can be performed without a gas for forming a plasma) (page 5, paragraph 3, and page 6, paragraph 2). Therefore, it would have been obvious to one of ordinary skill in the art to perform the electron bombardment heating portion of the heating / cleaning cycle of Harvey et al. first, as taught by Wright et al., without a gas for forming the plasma, as taught by Matthews, and then adding the gas (i.e., argon) for forming the plasma, with the reasonable expectation of (1) success, as Matthews teaches that electron bombardment heating can be carried out in an evacuated vacuum chamber without raising the chamber pressure by admitting argon gas, and (2) obtaining the benefits of not using a gas such as argon in the first heating portion of the heating / cleaning cycle of Harvey et al., such as reducing the amount of gas utilized / required in the process, thereby reducing processing costs.

20. Claims 17 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harvey et al. (GB 1 447 754 A) in view of Matthews (GB 2 323 855 A), in further view of Welch (USPN 4,209,552), in further view of Goedicke et al. (WO 97/22988 A1), and in further view of Frye et al. (USPN 4,380,865).
21. The combination of Harvey et al., Matthews, Welch, and Goedicke et al. teaches all the limitations of Claims 17 and 23 as set forth above in paragraph 13, except for a method wherein, during the alternating heating / cleaning steps of Harvey et al. and prior to the coating step of Harvey et al., heating the article to a temperature of over 800° C, so long as the coating temperature lies above 800° C and the temperature

during the heating / cleaning cycle of Harvey et al. lies above the coating temperature. However, such limitation would have been obvious to one of ordinary skill in the art in light of Frye et al. for the reasons set forth in paragraph 18 of the non-final Office Action (i.e., paper #7, mailed on 6/19/2002).

Response to Arguments

22. The applicant's arguments filed on 3/5/2003 have been fully considered but are not persuasive. Specifically, the applicant's arguments are moot in view of the new grounds of rejection presented above. The examiner does note with appreciation that the applicant expressed a willingness to submit a Declaration under Rule 1.132 to show an unexpected advantage of the claimed switching frequencies over the frequencies taught by the prior art. If and when such a Declaration is submitted, it will be fully considered by the examiner. The examiner notes that, for such a Declaration to be sufficient to overcome the *prima facie* case of obviousness, the claimed switching frequencies must be compared to the closest switching frequencies suggested by the prior art (i.e., 1 Hz to 1000 kHz, as taught by Goedicke et al.).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wesley D Markham whose telephone number is (703)

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308-7557. The examiner can normally be reached on Monday - Friday, 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (703) 308-2333. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



WDM
May 9, 2003

Wesley D Markham
Examiner
Art Unit 1762



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